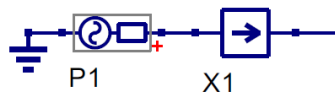


Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes



- All units work from the mK range to 77k
- First Table uses Max/Min specs and 2nd table uses typical specs
- Model number is determined by sales order. This corresponds to connector configuration & shielding chosen.

Cavity and isolator

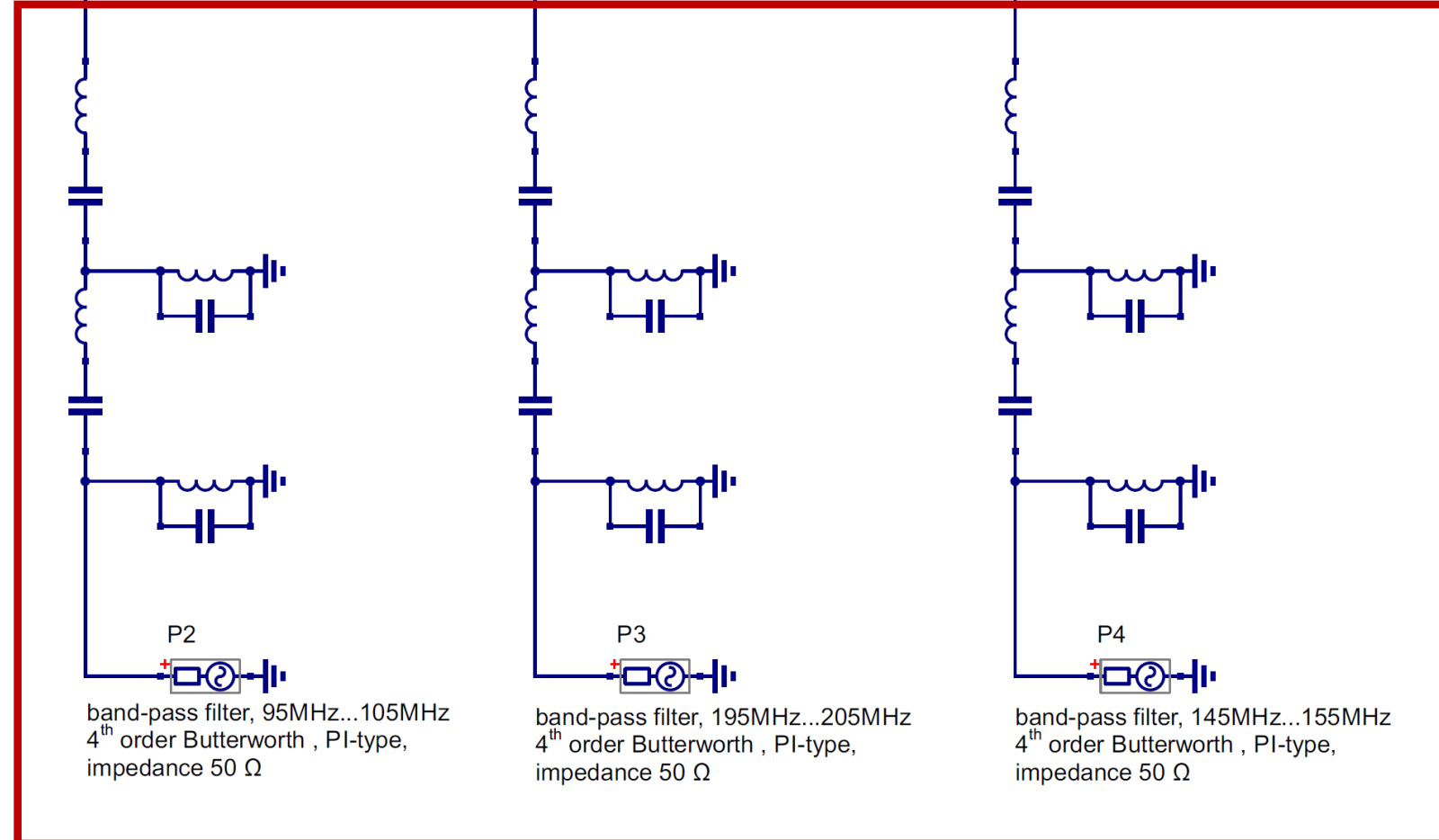
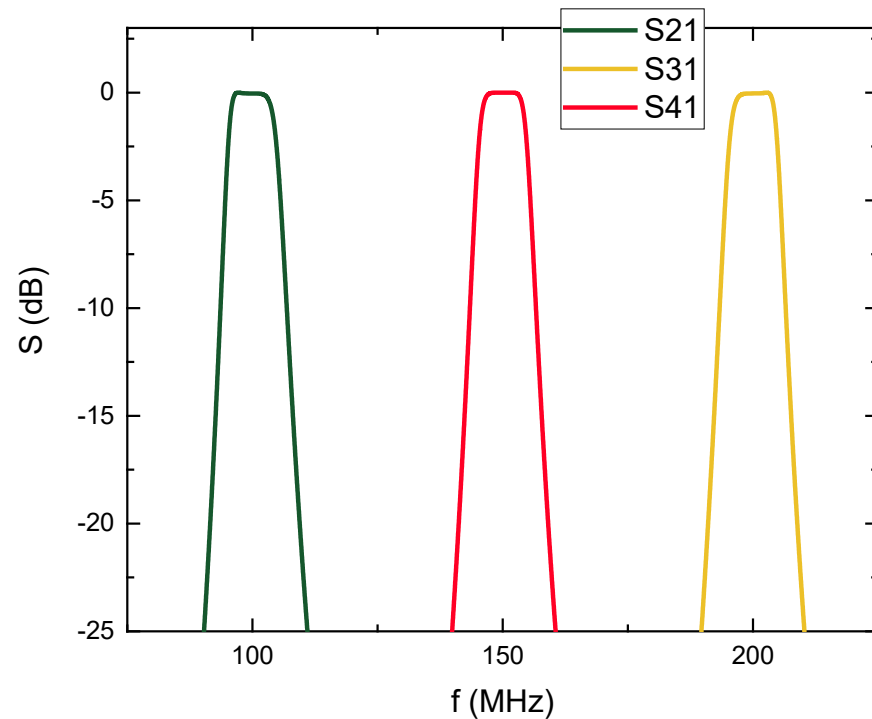


Model #	Freq Start (GHz)	Freq Stop (GHz)	Isolation (dB min)	Insertion Loss (dB max)	Return Loss (dB max)
QCY-M1802001xx	0.180	0.200	16	1.0	16
QCY-M2002201xx	0.200	0.220	16	1.0	16
QCY-M2202401xx	0.220	0.240	16	1.0	16
QCY-M2402601xx	0.240	0.260	16	1.0	16
QCY-M2753001xx	0.275	0.300	16	1.0	16
QCY-M3253501xx	0.325	0.350	16	1.0	16
QCY-M3504001xx	0.350	0.400	18	1.0	18
QCY-M4004501xx	0.400	0.450	18	1.0	18
QCY-M4505001xx	0.450	0.500	18	1.0	18
QCY-M5005501xx	0.500	0.550	18	0.8	18
QCY-M5606401xx	0.560	0.640	18	0.6	18
QCY-M6008001xx	0.600	0.800	17	0.5	17
QCY-M6009001xx	0.600	0.900	15	0.5	15
QCY-M7009001xx	0.700	0.900	20	0.5	20
QCY-G0080121xx	0.8	1.2	15	0.5	15
QCY-G0110151xx	1.1	1.5	17	0.5	17
QCY-G0120181xx	1.2	1.8	16	0.4	16
QCY-G0150201xx	1.5	2.0	17	0.4	17
QCY-G0200251xx	2.0	2.5	17	0.4	17
QCY-G0220261xx	2.2	2.6	18	0.4	18

Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes



Bandpass filters
with different
central frequency



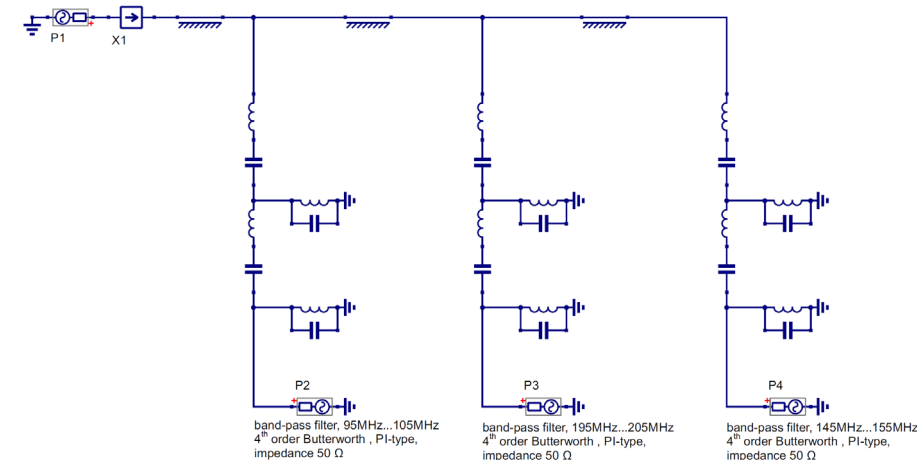
Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes

Inductances

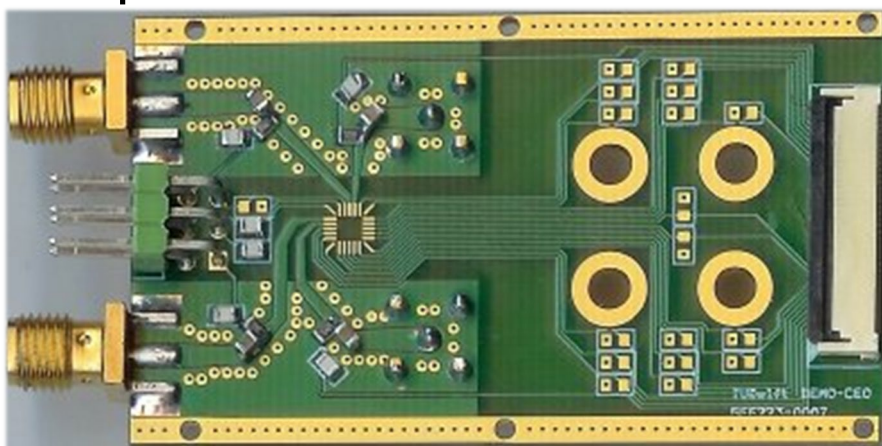
$$4.0 \text{ nH} < L < 1.5 \text{ uH}$$

Capacitances

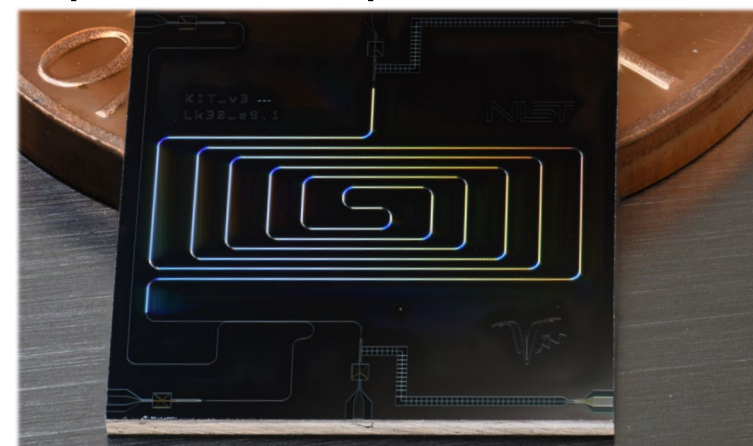
$$500 \text{ fF} < C < 500 \text{ pF}$$



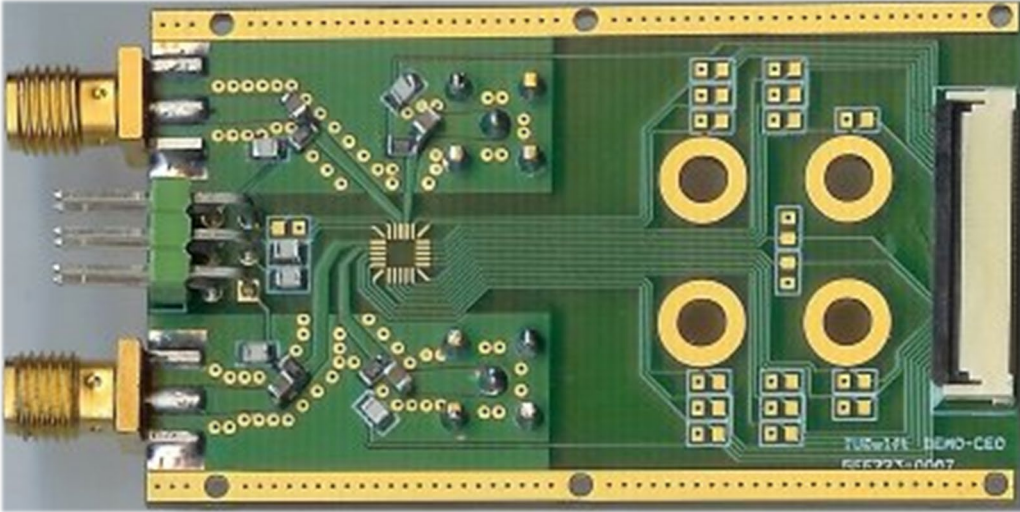
Option 1 - Standard PCB



Option 2 - Superconductors



Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes

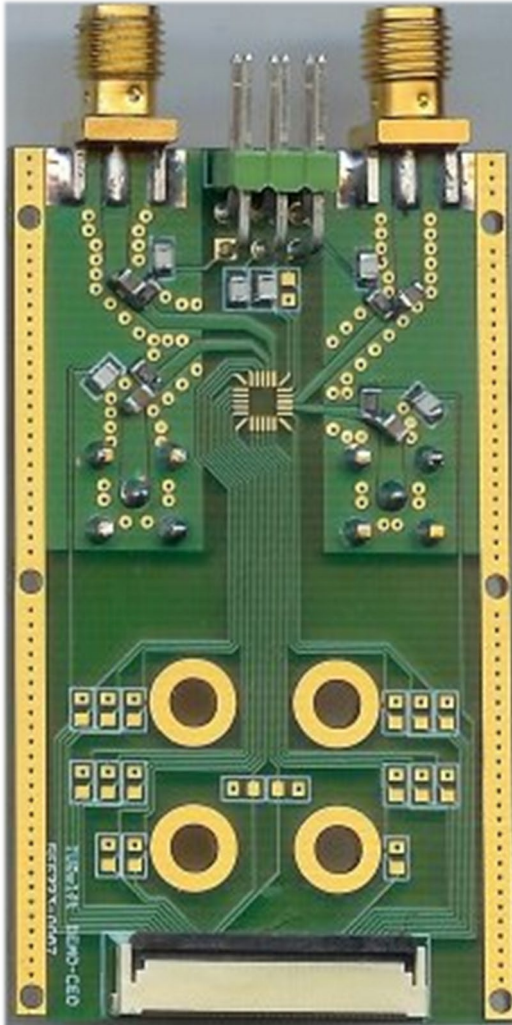


Next steps:

- Options analysis
- BoM

Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes

Option 1 - Standard PCB



- Dielectric Rogers – RO4000
- Coplanar waveguide or Substrate Integrated Coaxial Line
- SMD components
 - Inductors - High Flux Core or Moly Permalloy
 - Capacitors - CP0 or NP0 dielectric

Task 4.5: Multiplexing - Simultaneous measurement of multiple cavity modes

Option 2 - Superconductor



- Substrate
 - High resistivity silicon
 - Sapphire
- Superconductor
 - Niobium
- Coplanar Waveguide or Inverted Stripline
- Wire bonding - loss estimation